

Appl. No. 09/873,316  
Resp. dated Dec. 12, 2005  
Resp. to Office action of Jul. 12, 2005

### REMARKS

Claims 1, 3-9, 11-15 and 17 are pending. Claims 1, 3-9, 11-15 and 17 stand rejected.

Claims 1, 3-9, 11-15 and 17 stand rejected under 35 U.S.C. § 103(a) as being obvious over United States Patent No. 6,624,767 B1 ("Shiu") in view of United States Patent No. 6,714,606 B1 ("Qian"). Applicant respectfully traverses the rejection as set forth below.

#### Claims 1 and 3-5

Claim 1 recites, for example, "wherein said means applies a first portion of a second de-interleaving pattern as data is written to the single memory buffer, and wherein said means applies a second portion of said second de-interleaving pattern as data is read from the single memory buffer".

The Office Action of July 12, 2005 ("the Office Action") states that "Shiu is silent to disclosing wherein said means applies a first portion of a second de-interleaving pattern as data is written to the single memory buffer, and wherein said means applies a second portion of second de-interleaving pattern as data is read from the single memory buffer". The Office Action at page 4.

The Office Action states that Qian makes up for the teaching deficiencies of Shiu. "Qian et al. Discloses, see figure 4, col. 1, lines 51-53, the order data is read from memory may comprise a de-interleaved pattern with respect to the order the data is written to the memory (see col. 1, lines 51-53)". The Office Action at page 4.

FIGS. 3 and 4 of Qian show the same process. Applicant respectfully directs the attention of the Examiner to Qian at col. 5, lines 24-35 which describes FIG. 3 and Qian at col. 5, lines 58-63 which describes FIG. 4.

To understand FIGS. 3 and 4, it is noted that the form "information (address)" is used in the illustrations. The interleaved information 0, 11, 22, 33, 44, ... is written into addresses 0, 1, 2, 3, 4, 5, ... as indicated in FIGS. 3 and 4. The interleaved information is written into the first row of the illustration in FIG. 3. After the interleaved information has been written into the eleven rows, then the columns are read out. The de-interleaved information 0, 1, 2, 3, 4, 5, 6, ..., 87 is read out column by column.

Appl. No. 09/873,316  
Resp. dated Dec. 12, 2005  
Resp. to Office action of Jul. 12, 2005

FIG. 4 merely shows that the reading may commence once the information 53 has been written into address 76.

Thus, Qian merely describes a process in which interleaved information is received and written as rows of addresses. The interleaved information is read out as de-interleaved information by reading out columns of addresses.

Applicant respectfully submits that FIGS. 3 and 4 and the above descriptions help to place the Summary of the Invention section of Qian in the proper perspective. Thus, the statement that "[t]he order data is read from said memory may comprise a de-interleaved pattern with respect to the order the data is written to the memory" merely relates, for example, to FIGS. 3 and 4 in which interleaved information is written into rows of addresses and read out as de-interleaved information by reading out columns of addresses.

Neither Shiu nor Qian teaches, for example, means that applies *a first portion* of a second de-interleaving pattern as data is *written* to the single memory buffer and that applies *a second portion* of the second de-interleaving pattern as data is *read* from the single memory buffer. Qian which allegedly makes up for the teaching deficiencies of Shiu does not teach applying a first portion of a de-interleaving pattern as data is written to a buffer and a second portion of the de-interleaving pattern as data is read from the buffer. Qian teaches writing the interleaved information as received in order. This does not constitute applying a first portion of a de-interleaving pattern as data is written to a buffer. Qian teaches that the entire de-interleaving pattern is achieved during the reading from the memory. Applicant respectfully submits that the teaching deficiencies of Shiu are not made up by the teachings of Qian.

Applicant respectfully proposes a logical reason as to the "silence" of Shiu with respect "to disclosing wherein said means applies a first portion of a second de-interleaving pattern as data is written to the single memory buffer, and wherein said means applies a second portion of second de-interleaving pattern as data is read from the single memory buffer". The Office Action states that that "second de-interleaving 252 can be achieved at the receiver unit by writing the received symbols for each physical channel to the memory bank in a permuted order complementary to that used at the transmitter unit to achieve the second interleaving". The Office Action at page 3. Thus, Shiu teaches that, by writing received symbols in a permuted order (as opposed to "in order"), the de-interleaving is completely accomplished. In other words,

Appl. No. 09/873,316

Resp. dated Dec. 12, 2005

Resp. to Office action of Jul. 12, 2005

in view of the teachings of Shiu that the de-interleaving is completely accomplished by writing the received symbols in a permuted order (as opposed to "in order"), one of ordinary skill in the art would have no teaching or suggestion to add additional operations (Applicant would characterize the additional operations as redundant operations) to the de-interleaving process. If Shiu teaches that the de-interleaving is completely accomplished by writing the received symbols in a permuted order, then there is no logical basis for one of ordinary skill in the art, after reading Shiu, to add another operation to the already completed de-interleaving process such as applying a second portion of a de-interleaving pattern as data is read from a buffer. It is respectfully submitted that adding such a redundant operation to the process taught in Shiu would undermine an already completed process. See, e.g., M.P.E.P. § 2145(X)(D) (section entitled "Reference Teach Away from the Invention or Render Prior Art Unsatisfactory for Intended Purpose"). In view of the teachings of Shiu, Applicant respectfully submits that the alleged teachings of Qian would be inefficient and harmful to the already completed de-interleaving process as set forth in Shiu and alleged in the Office Action.

In addition, Applicant respectfully submits that both the teachings of Qian and Shiu teach away from the claimed invention as set forth in claim 1. Qian teaches that the entire de-interleaving process is achieved by reading out columns of addresses. As alleged in the Office Action, Shiu teaches that the entire de-interleaving process is achieved by writing symbols in a permuted order. Both teach away from means that "applies a first portion of a second de-interleaving pattern as data is written to the single memory buffer" and that "applies a second portion of said second de-interleaving pattern as data is read from the single memory buffer" as set forth in claim 1.

Furthermore, Applicant respectfully submits that Shiu and Qian teach away from each other. As alleged in the Office Action, Shiu teaches that the entire de-interleaving process is achieved in the writing and Qian teaches that the entire de-interleaving process is achieved in the reading. It is respectfully submitted that Shiu and Qian completely teach away from each other in accomplishing the de-interleaving process.

For at least the above reasons, it is respectfully submitted that the rejection be withdrawn with respect to independent claim 1 and its rejected dependent claims (i.e., claims 3-5).

Appl. No. 09/873,316  
Resp. dated Dec. 12, 2005  
Resp. to Office action of Jul. 12, 2005

#### Claims 6-8

Claim 6 recites, for example, "wherein said means applies a first portion of a second de-interleaving pattern as the data is written into the memory buffer, and wherein said means applies a second portion of said second de-interleaving pattern as the data is read from the memory buffer".

Accordingly, the same or similar arguments made with respect to claim 1 are made, if appropriate, with respect to claim 6.

For at least the above reasons, it is respectfully submitted that the rejection be withdrawn with respect to independent claim 6 and its rejected dependent claims (i.e., claims 7 and 8).

#### Claim 9

Claim 9 recites, for example, "wherein the read/write unit applies a first portion of a second de-interleaving pattern as the data is written to the memory buffer, and wherein the read/write unit applies a second portion of said second de-interleaving pattern as the data is read from the memory buffer".

Accordingly, the same or similar arguments made with respect to claim 1 are made, if appropriate, with respect to claim 9.

For at least the above reasons, it is respectfully submitted that the rejection be withdrawn with respect to claim 9.

#### Claims 11 and 12

Claim 11 recites, for example, "applying a first portion of a second de-interleaving pattern as the data is written into a memory buffer" and "applying a second portion of said second de-interleaving pattern as the data is read from the memory buffer".

Accordingly, the same or similar arguments made with respect to claim 1 are made, if appropriate, with respect to claim 11.

For at least the above reasons, it is respectfully submitted that the rejection be withdrawn with respect to independent claim 11 and its rejected dependent claim (i.e., claim 12).

Appl. No. 09/873,316  
Resp. dated Dec. 12, 2005  
Resp. to Office action of Jul. 12, 2005

Claims 13 and 14

Claim 13 recites, for example, "writing said data to said memory buffer according to a first portion of a second de-interleaving pattern" and "reading said data from said memory buffer according to a second portion of said second de-interleaving pattern".

Accordingly, the same or similar arguments made with respect to claim 1 are made, if appropriate, with respect to claim 13.

For at least the above reasons, it is respectfully submitted that the rejection be withdrawn with respect to independent claim 13 and its rejected dependent claim (i.e., claim 14).

Claims 15 and 17

Claim 15 recites, for example, "wherein said means performs a first portion of said second de-interleaving as the data is written into the memory buffer and said means performs a second portion of said second de-interleaving as the written data is read from said memory buffer".

Accordingly, the same or similar arguments made with respect to claim 1 are made, if appropriate, with respect to claim 15.

For at least the above reasons, it is respectfully submitted that the rejection be withdrawn with respect to independent claim 15 and its rejected dependent claim (i.e., claim 17).

Conclusion

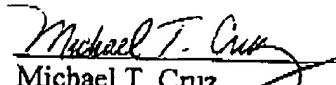
For at least the above reasons, Applicant respectfully requests that the rejection be withdrawn with respect to claims 1, 3-9, 11-15 and 17.

Appl. No. 09/873,316  
Resp. dated Dec. 12, 2005  
Resp. to Office action of Jul. 12, 2005

The Commissioner is hereby authorized to charge additional fees or credit overpayments to the deposit account of McAndrews, Held & Malloy, Account No. 13-0017.

Dated: December 12, 2005

Respectfully submitted,

  
Michael T. Cruz  
Reg. No. 44,636

McAndrews, Held & Malloy, Ltd.  
500 West Madison Street, 34th Floor  
Chicago, Illinois 60661  
Telephone: (312) 775-8084  
Facsimile: (312) 775-8100